

We have no news of the other parties, but Mr. Eliot, C.S.I., F.R.S., is expected to-morrow to take charge of the meteorological observations, and he doubtless will bring observers with him.

I enclose some photographs of the various instruments with their shelters. During the eclipse everything sunward will come down, and arrangements have been made so that everybody will have 40 seconds for a square look at the eclipse. The eclipse clock and timekeepers (we have a relay, one relieving the other at "65 seconds more") are working splendidly.

The new dropping-shutters, $16 \times 6\frac{1}{2}$, promise excellently; ten photographs of the spectrum can be taken in 10 seconds. A boat will be moored at the spot which we calculate the shadow will reach 5 seconds

"A TRIP TO CANADA."

AMONG the more interesting and instructive results of the recent visit of the British Association to Canada, is the issue of a pamphlet entitled "A Trip to Canada" by a clergyman, who was one of the party.

The motives with which the journey was undertaken are given with a naïveté which commands respect. "The Jubilee of 1897," we are told, "naturally suggests the idea of a little foreign travel on one's own account. It is one thing to read about the Colonies; it is another to see them with one's own eyes. Where shall we go? There is a large choice. In these days there is a variety of Cook-like associations, which bid for one's patronage. This summer I was glad to take what came to hand.



FIG. 3.—9-inch Prismatic Camera, showing arrangement and kind of shelter used.

before totality, when the exposures begin; but we are not entirely dependent upon this, for the cusp will be watched, and again it has been calculated that this will extend through an arc of 45° at the same time (5 seconds) before totality. The arc will be watched to extinction in a $3\frac{1}{4}$ -inch telescope, and this will enable the general signal "go" to be given.

Prof. Pedler has been here some days, and has got his 6-inch equatorial with grating spectroscope drill into perfect order. He begins 7 minutes before totality to repeat my Egyptian observations and studies certain special lines in the spectrum of the corona during totality. He has a comparison arc spectrum of iron, carbon, &c., photographed in the instrument before we came out.

NORMAN LOCKYER.

The British Association held its meeting last August in Toronto."

This is, indeed, a delightful picture. When the century was in the lusty hey-day of its youth and middle age, prelates and professors "gave and received hard knocks." Now, as the years roll on, science waits, hat in hand, on the country rector. His breakfast table is piled with the circulars of a "variety of Cook-like associations." As he cracks his egg he thinks of accompanying the geologists to Moscow and the Caucasus. A slice of cold ham recalls the Arctic Circle, the midnight sun and Thos. Cook. Then his vagrant fancy swerves to Grindelwald and Dr. Perowne. But with the first spoonful of marmalade he feels that the British Association and Toronto have secured the prize. He decides to patronise universal science and the British Empire.

The reasons for this decision were not less stupendous than the decision itself. Civilisation has travelled from east to west. "Let us," says the author, in a moment of pious aspiration, "let us follow in the track of Providence."

The idea of taking a "Cook-like" tour in "the track of Providence" strikes us as novel, and would, perhaps, have been thought to be profane had it emanated from Thos. Cook and Son themselves. Originating, as it does, with a clergyman, we can only bow the head and wonder at the varied manifestations of the religious instinct.

The alternative plans had been carefully considered, and the following sentences indicate the kind of information which had been collected. "The British Empire is composed of possessions in many parts of the globe. We hold India by military occupation; its 300 millions of people are put under our rule. Australia, New Zealand and Tasmania are in the Antipodes; Borneo, Singapore and the West Indies are in the tropics. Africa has various climes and races and interests. . . . Canada comes first among our possessions from a tourist point of view."

After this display of recondite knowledge, it will hardly be believed that one of the author's motives for taking a trip across the Dominion was that it improves one's geography; but this fact, reinforced by the arguments as to the "track of Providence" and the "tourist point of view" settled the matter, and to Canada our author went.

The journey once undertaken was as remarkable in its experiences as in its inception. "For the two first days [of the voyage]," says the traveller, "you feel more or less in a strange land." The feelings of the first two days are often so peculiar, that it is difficult to find words to describe them; but to feel "in a strange land" when you are really at sea is, we believe, a unique experience.

Arrived at the other side, "Quebec in electric light, as we gazed upon it, reminded me of Valetta between its two harbours, or even of Venice standing in its waters. It is commonly said to resemble Gibraltar." As we have always understood that there is a hill or cliff of some sort both at Gibraltar and Quebec, but that Venice is as flat as a pancake, we confess to being puzzled by this passage.

The first effect of Niagara on the traveller was exactly the opposite of that it ordinarily produces. "Niagara," he says, "makes one forget Lord Kelvin." The Horse Shoe Falls, we are told, "is a thing to see not once or twice, but to imbibe and sleep upon." The first of these phrases reminds us of the experiences of the young lady at Venice. "We have been out on the Grand Canal," she wrote, "drinking it all in. Life never felt so full before." We are not aware that there is any competitor for the originality of the idea of sleeping on the Horse Shoe Falls.

At Toronto our author's favourite subjects were geography and anthropology, but he "threw in a little geology and zoology." Prof. George Dawson will be sorry to hear that his address was dull; but Prof. Miall will be gratified by the following summary of his teaching: "He said you should not collect specimens and put them in bottles, but study their living habits."

We cannot follow the trip across the continent in detail.

Sometimes the author becomes didactic. "The old road [in the valley of the Fraser] is now disused, and the iron road has taken its place. . . . The two roads are a natural parable. The old road is like the way of the world, along which weary travellers toil and often lose hope. In the railway the voyageur (*sic*) travels safely and with rapidity. The cares of travel sit lightly upon him. He sleeps peacefully at night, and he enjoys the prospect by day. He looks on his journey's end with pleasure. He thanks . . ." But we refrain from giving the quotation which the author adds to this quaint specimen of moral reflection. The sleek tourist, carted about

without any effort of his own except that of pulling his purse from his pocket, has never before, we suppose, been taken as the type of the "seekers after truth." The pioneer, hewing his way through the wilderness, careless if his road be rough or smooth is, we take it, much nearer to the conception which John Bunyan had formed of those who through the Slough of Despond, the Valley of the Shadow of Death, and the River itself, press forward to their goal.

One quotation more and we have done. We all remember the difficulty with which Martin Chuzzlewit escaped from the peremptory demand of Colonel Diver, "Let me ask you, sir, how do you like my country?"

Our author would have been equal to the occasion. "One is asked one's opinion about the country. That it is a great country is plain to all. A country of the size of Europe is not a small country. At present it is thinly populated. The Canadians think much of their country and everything in it. An enthusiastic young lady, whose home is in Ottawa, and who is on her way to a finishing school in London, said 'Don't you think the electric cars in Ottawa are better than anywhere else?' Of course they are, one cannot but reply, quite *bonâ-fide*. Would not she brighten an electric car, wherever she was?"

This is masterly. The judicial logic of the opening and the skilful retreat behind the young lady would have baffled Colonel Diver himself.

But enough of this. The note of the British Association is that it strives to bring the scientific expert into contact with the amateur, who is often a man from whom, on some special point, the expert may have much to learn. It is possible that some of those who are thus brought nominally within the scientific fold, care more for the cheap excursions and the "tourist point of view" than for the advancement of science. This is perhaps inevitable. At all events the Association has not chosen to attempt to sift the chaff from the grain, and the Canadians were willing to extend their generous hospitality not only to the group of well-known scientific workers who crossed the Atlantic, but to others whose only introduction was their Association ticket. As a member of the Association our author was everywhere kindly received, was carried across the continent half-price, and even enjoyed the pleasure (which he duly notes) of riding in electric trams for nothing. It might have been expected that he would have been grateful for the privileges which were extended to him in his presumed character of one anxious for the advancement of science. We have looked carefully through the pamphlet and find scarcely a single expression which gives evidence of any such sentiment. On the contrary he seems to think that the benefit was mutual. His last words are: "A trip to Canada is a pleasant experience. May I say that it gives pleasure to those whom one goes to see, as well as to the individual who makes the trip."

His scientific companions fare no better than his hosts. They are gracefully described as crossing the Atlantic "to disgorge their erudition well flavoured with salt." There is a contemptuous reference to "the smaller fry." A body which Sir John Evans, Lord Kelvin and Lord Lister were not ashamed to lead, is called "Cook-like." The author's whole attitude is that of a man who has paid his money, and has had no more than his rights.

We should not have dealt with this pamphlet at such length had it not been accompanied by a printed request for subscriptions for an object which many men of science would be glad to help. In his desire to benefit this object the author may give his work a wide circulation in this country and in Canada. We think it right, therefore, to draw attention to what otherwise might have been left unnoticed, in order to protest that this pamphlet must not be taken to represent the attitude of average members of the British Association.

None of them desired to imbibe Niagara, or are likely to forget Lord Kelvin. Amongst them there was the deepest feeling of gratitude for the hospitality they received; hospitality which the most distinguished acknowledged was more kindly and more lavish than they had any right either to expect or to desire.

THE HABITS OF ICE-SEALS.

THERE are four species of earless, or true seals inhabiting the boreal part of the North Atlantic and Arctic Oceans which may well be designated ice-seals, since they dwell for a considerable portion of the year either on the solid pack-ice or on ice-floes. These species are the Greenland or harp-seal (*Phoca granlandica*), often termed, on account of the conspicuous black markings on the yellowish-white ground-colour of the back, the saddle-back; the ringed seal (*P. hispida*); the large bearded seal, or square-flipper (*P. barbata*); and the crested, or hooded seal (*Cystophora cristata*), the males of which carry the peculiar dilatable sac on the nose from which the species derives its names. The first three of these are closely allied forms, but it is not a little remarkable that whenever the young of the first and second are born in a uniform yellowish-white coat, those of the third make their appearance in the world in a dark pelage; the white coat being not improbably shed *in utero*. It is commonly believed that the young of the fourth species are also white-coated, as are certainly those of the more southern grey seal (*Halichærus grypus*). If a white coat serves as a protection to the new-born "pup" on the ice, it is difficult to see why this type of coloration should have been departed from in the case of one species. But the whole subject is one of great difficulty, as the white-coated young of the grey seal may often be seen in the Hebrides reposing on black rocks. All the four species in question agree in the circumstance that the young are produced during their sojourn on the ice; but in other respects very considerable differences are displayed in regard to habits.

In the first place, the Greenland and the crested seal are essentially migratory animals, the former associating in immense herds and the latter in smaller parties, whereas the bearded seal, which is considerably the largest of the three, only makes a slight movement to the south when compelled by the increase of the winter pack-ice, and is a comparatively solitary creature. But these are by no means the only points of difference in this respect. The Greenland seal visits the country from which it takes its name twice annually, namely in the autumn and the spring; and breeds chiefly on the coasts of Jan-Mayen and Newfoundland, the young being produced in the latter district at the beginning of March, but in the former some weeks later. That some of these seals which migrate from Greenland travel westwards to Jan-Mayen is most probable, but where the remainder pass their time while away from their native land, is not yet ascertained with certainty. The southern migration of these seals on the Atlantic coast of America, which commences when the frost sets in, is described as a wonderful sight; at first small advance parties pass down, and these are followed by the main body, which includes thousands of individuals, and takes about a couple of days in passing a given point. Although during their migration hugging the coasts, the Greenland seals during the breeding-season frequent the heavy floe-ice, at least in East Greenland, which is not liable to break up, and therefore affords them a safe habitation. As they have no difficulty in obtaining access to the water, in this district, at any rate, they do not make breathing-holes; and it has been commonly supposed that this is their invariable habit, but in a little

pamphlet recently issued by Commander Robinson,¹ entitled "Ice-riding Pinnipeds," it is stated that when on solid thin ice such holes are made. In disposition this seal is mild and gentle; and it is a well-ascertained fact that the young are born in the white coat, the British Museum possessing a stuffed example in this state. From its numerical abundance it is commercially one of the most valuable of the true seals.

As regards the bearded seal, this, as already mentioned, is a comparatively rare and solitary species, fond of reposing on floating ice in the open sea, and moving southwards only when compelled by the extension of the pack-ice. It is apparently one of the species which does not make a breathing-hole, as it does not frequent large extents of ice; and it may generally be recognised at a distance by its habit of performing a somersault when diving into the water. In the pamphlet already referred to the suggestion is made that a certain number of the young of this species are infected by the migratory instinct of the young Greenland seals, and wander south with them. In addition to the testimony of sealers, a specimen in the Natural History Museum conclusively proves that the young "square-flipper" is born in the dark coat.

The ringed seal, which is common to the North Atlantic and Pacific, is a non-migratory species, whose favourite haunts are retired fjords and bays, in which it remains during the time they are tightly packed with ice. When, however, the ice breaks up, the "floe-rats," as they are called by the sealers, retire to the ice-floes, upon which the young are born in March and April. This species always form an "atluk," or breathing-hole in the ice, which is in the form of an oblique passage, through which the surface of the ice can easily be reached from below. The hole appears to be made while the ice is forming; but accurate accounts of the *modus operandi* are still required. In the above-mentioned pamphlet it is stated that the animal works on the ice with its front claws, revolving round this pivot with its body; but it is somewhat difficult to realise how such a method can be effectual, and, *primâ facie*, it would seem more probable that the passage is made while the ice is sufficiently thin to break with the weight of the seal, and kept open by constant use. The breathing-hole affords an easy method of capturing the seals which use it, and the great reduction in the number of these seals is largely due to this method of hunting.

As it differs much in external form from other ice-seals, so the crested seal has several peculiarities in habits. Unlike the others, it is a bad-tempered animal, living, except when driven to associate more closely by an unusual scarcity of ice, in small parties scattered over a wide extent of ice, always preferring the outside of the pack, or drift ice to the neighbourhood of land, and seldom frequenting either the coasts or isolated rocks. On the American side they are chiefly to be met with near the eastern edge of the main ice-pack, where there are numerous patches of open water, and consequently abundant room for fishing. Ordinarily small parties of from three to five individuals are scattered over the broken rough ice, at distances of from thirty to fifty yards apart. The easy access to water thus afforded obviates in general the necessity of making breathing-holes. They are stated to resemble fur-seals in being polygamous; and the males certainly engage in combats for the possession of the females, during which they utter loud cries which may be heard for miles. In winter these seals travel south, but they do not make the two annual journeys characteristic of the saddle-backs in Greenland. In European seas the crested seal has become comparatively rare, although on the American

¹ I am informed by the author that, owing to certain errors, all available copies of this work have been cancelled.